

REMARKS

Claims 1-20 were previously pending in this patent application.

Claims 9-13 have been previously withdrawn in response to a restriction requirement. Claims 1, 6, 14, 16, and 18-20 stand rejected. Claims 2-5, 7, 8, 15, and 17 are objected to. Herein, Claims 1, 14, and 20 have been amended. Accordingly, after this Amendment and Response, Claims 1-8 and 14-20 remain pending in this patent application. Further examination and reconsideration in view of the claims, remarks, and arguments set forth below is respectfully requested.

DRAWINGS

On 10/15/04, five sheets (i.e., sheet 1, sheet 2, sheet 3, sheet 4, and sheet 5) of formal drawings were submitted. A review of the five sheets of formal drawings has discovered that sheet 4 includes a drawing mislabeled as Figure 4. Herein, sheet 4 has been changed so that sheet 4 includes a drawing correctly labeled as Figure 5. No new matter was added.

35 U.S.C. Section 112, Second Paragraph, Rejections

Claim 20 is rejected under 35 U.S.C. Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention. It was stated (at page 2 of the Office Action) that Claim 20 recites the limitations "said first insulating layer" and "said second insulating layer", but insufficient antecedent basis is provided for these limitations.

Herein, Claim 20 has been amended to recite the limitations "said first isolation layer" and "said second isolation layer" instead of the limitations "said first insulating layer" and "said second insulating layer". Further, Claim 20 is dependent on Independent Claim 14, which recites the limitations "a first isolation layer" and "a second isolation layer". In light of these arguments, it is respectfully requested that the rejection under 35 U.S.C. Section 112, second paragraph, against Claim 20 be withdrawn.

35 U.S.C. Section 102(e) Rejections

Claims 1, 6, 14, 16, and 18-20 stand rejected under 35 U.S.C. 102(e) as being anticipated by Lombardo et al., U.S. Patent No. 6,772,992 (hereafter Lombardo). These rejections are respectfully traversed.

Independent Claim 1 recites:

A flash memory cell comprising:
a substrate having a source region, a drain region, and a channel region coupled between said source region and said drain region;

a floating gate, having a charge trapping region and a first fin region, wherein said charge trapping region is coupled to said channel region and said first fin region is coupled to said source region, wherein said first fin region comprises a doped region to reduce leakage current, and

a control gate coupled to said charge trapping region.
(emphasis added)

It is respectfully asserted that Lombardo does not disclose the present invention as recited in Independent Claim 1. The Office Action (at pages 2-3) cites Figure 1 and portions of Lombardo, as disclosing a flash memory cell comprising a substrate, a control gate (7), a floating gate having a charge trapping region (6) and a first fin region (5). On the contrary, Lombardo is directed to a memory cell unlike the memory cell recited in Independent Claim 1. In particular, Lombardo discloses a memory cell (1) having a silicon oxide cage (5) enveloping a film (6) of an electric charge storing material, which acts as a floating gate, and a control gate (7) formed on top of the silicon oxide cage (5). [Lombardo; Figure 1; Col. 3, lines 35-54]. Although the Office Action identifies the silicon oxide cage (5), which is a dielectric, as the first fin region, Lombardo fails to disclose the first fin region as comprising a doped region to reduce leakage current.

Unlike Lombardo, Independent Claim 1 is directed to a flash memory cell. The flash memory cell comprises a substrate, a control gate, and a floating gate having a charge trapping region and a first fin region, wherein the first fin region comprises a doped region to reduce leakage current. As

described above, Lombardo does not disclose the cited claim limitations of Independent Claim 1. Therefore, it is respectfully submitted that Independent Claim 1 is not anticipated by Lombardo and is in condition for allowance.

Dependent Claim 6 is dependent on allowable Independent Claim 1, which is allowable over Lombardo. Hence, it is respectfully submitted that Dependent Claim 6 is patentable over Lombardo for the reasons discussed above.

With respect to Independent Claim 14, it is respectfully submitted that Independent Claim 14 recites similar limitations as in Independent Claim 1. In particular, Independent Claim 14 is directed to a floating gate transistor. The floating gate transistor comprises a source, a drain, a channel, a charge trapping region, and a first fin, wherein the first fin comprises a doped region to reduce leakage current. As described above, Lombardo does not disclose the cited claim limitations of Independent Claim 14. Therefore, Independent Claim 14 is allowable over Lombardo for reasons discussed in connection with Independent Claim 1.

Dependent Claims 16 and 18-20 are dependent on allowable Independent Claim 14, which is allowable over Lombardo. Hence, it is respectfully submitted that Dependent Claims 16 and 18-20 are patentable over Lombardo for the reasons discussed above.

ALLOWABLE SUBJECT MATTER

Claims 2-5, 7, 8, 15, and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Dependent Claims 2-5 and 7-8 and Dependent Claims 15 and 17 are dependent on allowable Independent Claims 1 and 14 respectively, which are allowable over Lombardo. Hence, it is respectfully submitted that Dependent Claims 2-5, 7-8, 15, and 17 are patentable over Lombardo for the reasons discussed above.

CONCLUSION

It is respectfully submitted that the above arguments and remarks overcome all rejections and objections. For at least the above-presented reasons, it is respectfully submitted that all remaining claims (Claims 1-8 and 14-20) are in condition for allowance.

The Examiner is urged to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,
Wagner, Murabito & Hao, LLP

Dated: 11-30-2004

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Attachments

Amendments to the Drawings:

On 10/15/04, five sheets (i.e., sheet 1, sheet 2, sheet 3, sheet 4, and sheet 5) of formal drawings were submitted. A review of the five sheets of formal drawings has discovered that sheet 4 includes a drawing mislabeled as Figure 4. Herein, sheet 4 has been changed so that sheet 4 includes a drawing correctly labeled as Figure 5.

Attachment: Replacement Sheet for sheet 4 (correctly labeling Figure 5)

Annotated Sheet for sheet 4

TITLE: FLASH MEMORY CELL HAVING REDUCED LEAKAGE CURRENT
INVENTOR(S): Sheung Hee Park, Richard M. Fastow, and Dong-Hyuk Ju
USSN: 10/618,191 Attorney Docket #: AMD-H0534

ANNOTATED SHEET

4 / 5

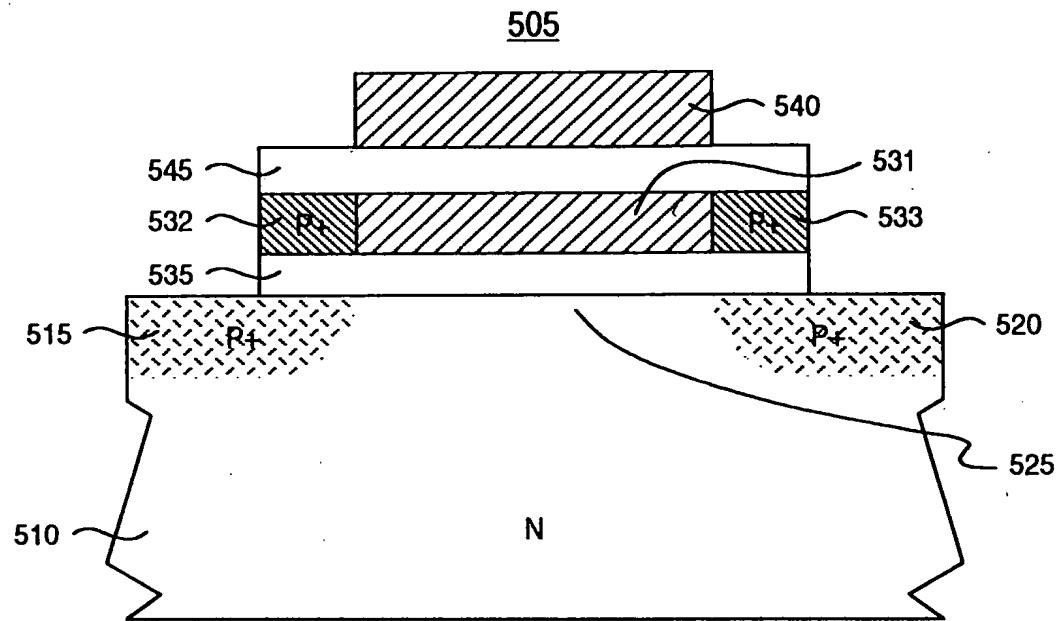


FIGURE ~~4~~ 5